

Abstract Of The Invention

A communication system has a stratospheric platform with a payload controller and a phased array antenna having a plurality of main array elements for generating a plurality of communication beams and a plurality of auxiliary elements for canceling interference between the communication beam.

- 5 A gateway station communicates with the stratospheric platform. The gateway station scales the plurality of elements to form a reconfigurable plurality of beams. The gateway station communicates an embedded control signal to the stratospheric platform to communicate a scaling of elements to form the communication beams and the auxiliary element output. The auxiliary element
- 10 output is used to provide interference canceling.